

REMARKS

Reconsideration and further examination of the application, as amended, are respectfully requested. All objections and rejections are traversed.

In the Office Action, claim 1 was objected to on the grounds that the final limitation did not seem to be a complete sentence. Applicants respectfully traverse the objection.

As set forth in the preamble, claim 1 is directed to a “method for avoiding starvation of interrupts of a computer system”. The final step of the claimed method recites:

if the interrupt queue register is full, one of **waiting** a preset time and re-posting the new interrupt to the interrupt queue register, and **draining** the contents of the interrupt queue register into the memory subsystem so that the interrupt queue register can store the new interrupt.

That is, the last limitation of claim 1 provides, if the interrupt queue register is full, to perform one of two alternative steps, i.e., either “**waiting** a preset time . . .” or “**draining** the contents of the interrupt queue register . . .” Applicants submit that this limitation is written in the “one of A and B” claim format preferred by the Patent and Trademark Office for reciting an alternative. Accordingly, applicants request that the objection to claim 1 be withdrawn.

Claims 1 and 5 were also objected to on the grounds that the term “new interrupt” is reposted, not new. Applicants respectfully traverse the rejection. Claims 1 and 5 utilized the term “new interrupt” to distinguish between interrupts already posted to the interrupt queue register, and an interrupt that is to be posted to the interrupt queue register. Nonetheless, applicants have amended claim 1 (as well as claims 2 and 5) replacing

“new interrupt” with “given interrupt”. Applicants request that the objection to claims 1 and 5 be withdrawn.

§112, First Paragraph

Claims 1-5, 12, 14-18 and 20 were rejected under 35 U.S.C. §112, first paragraph. In particular, the Office Action states that the Control Status Register (CSR), the interrupt starvation counter and the threshold, all of which are disclosed in the Specification, are critical to the practice of the invention, and therefore must be included in the claims. Applicants respectfully traverse the rejection for the reasons set forth herein.

As stated in the MPEP:

In determining whether an unclaimed feature is critical, **the entire disclosure must be considered**. Features which are merely preferred are not to be considered critical.

MPEP §2164.08(c). Indeed, the MPEP goes on to state that “Limiting an applicant to the preferred materials in the absence of limiting prior art would not serve the constitutional purpose of promoting the progress in the useful arts.” Applicants respectfully submit that the Office Action is attempting to limit the applicant to the preferred materials disclosed in the Specification, even though no such limitations are warranted in view of the prior art. Indeed, the Office Action includes no rejection based on the prior art.

First, applicants note that claim 1, in fact, recites “providing an interrupt queue register having a fixed number of entries for storing interrupts to be serviced by the at least one processor”. Thus, contrary to the assertion contained in the Office Action, claim 1 does indeed recite a “register”.

Second, to sustain an enablement rejection, the Office Action must show that the specification “makes clear that the limitation is critical for the invention to function as intended.” MPEP §2164.08(c). Applicants submit that the Office Action has failed to meet this burden. In particular, the Office Action mentions only Fig. 5 of the Specification in support of its rejection. Giving due consideration of the Specification as a whole, however, demonstrates that the “interrupt starvation counter” and the “threshold” are merely preferred materials or embodiments of the invention. For example, on page 7, lines 21-23, the Specification states that “Fig. 4 is a schematic block diagram of a **preferred** interrupt control system 400 which may advantageously be disposed, at least in part, at the interrupt port P7”. Similarly, at page 8, lines 13-15, the Specification states that “The LSI register file 410 is **preferably arranged**, at least logically, as a table array having a plurality of columns and rows whose intersections define corresponding cells for storing information”. In the preferred embodiment, the invention includes an interrupt starvation counter within this LSI register file 410. See Specification at p. 8, line 30 to page 9, line 1. Furthermore, there is no mention in the Specification that either one of these features is “critical” or “essential” to the invention.

In addition, at page 16, lines 19-22, the Specification clearly states as follows:

The foregoing description has been directed to specific embodiments of the present invention. It will be apparent, however, that other variations and modifications may be made to the described embodiments, with the attainment of some or all of their advantages.

Thus, when the Specification is considered as a whole, the interrupt starvation counter and the threshold are shown to be merely preferred features, as opposed to being critical

elements of the invention. Finally, applicants note that the interrupt starvation counter appears in claim 3, and that the threshold appears in claim 5.

The Office Action also stated that, although claims 1 and 16 recite the draining of the interrupt queue register, none of the dependent claims “provides any condition and means for adapting this option”. Applicants do not understand what is meant by this rejection. For example, both claims 1 and 16 recite that the “draining” can be performed if the interrupt queue register is determined to be full. Claim 10, moreover, recites that the contents of the interrupt queue register “are placed in a first-in-first-out (FIFO) queue” within the memory subsystem. And, claim 14 recites that the draining “is performed by Privileged Architecture Library (PAL) code running at the processor”. Thus, applicants submit that claims 1 and 16 satisfy all of the requirements of 35 U.S.C. §112.

§112, Second Paragraph

Claims 1-15 were rejected under 35 U.S.C. §112, second paragraph. Specifically, the Office Action stated that claim 1 recited the term “the new interrupt”. As explained above, claims 1, 2 and 5 have been amended to replace “new interrupt” with “given interrupt”. Accordingly, applicants submit that claims 1, 2 and 5 satisfy the requirements of §112, second paragraph.

Additionally, the Office Action stated that the term “the in-memory FIFO queue” of claim 11 lacks antecedent basis. Applicants have amended claim 11 to omit the term “in-memory”. Applicants also note that the FIFO queue was introduced in claim 10, upon which claim 11 depends. Thus, sufficient antecedent basis exists for the term “the FIFO queue” appearing in the claim 11.

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Allowable Subject Matter

The Office Action noted that claims 6-11, 13 and 19 would be allowable if rewritten.

Applicants submit that the applicant, as amended, is in condition for allowance and early favorable actions is requested.

Respectfully submitted,



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